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TRANSACTIONS

ACTUARIAL SOCIETY OF AMERICA

October, 1903.

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Vol. VII. No. 30

ACTUARIAL SOCIETY OF AMERICA

"The work of science is to substitute facts for appearances and demonstrations for impressions."—RUSKIN.

TRANSACTIONS

October, 1903.

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NOTICE.

The Society is not responsible for statements made or opinions expressed in the articles, criticisms and discussions published in these "Transactions."

CONTENTS OF No. 30.

	PAGE
OFFICERS AND MEMBERS	iv-v
NOTATION	vi
PREFACE	501
THE FOURTH INTERNATIONAL CONGRESS OF ACTUARIES	502
THE RECENT ACTUARIAL CONGRESS. John Tatlock	527
THE BRITISH OFFICES LIFE TABLES, 1893:	
A Note on their Naming. C. D. Higham	539

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ACTUARIAL SOCIETY OF AMERICA.

OCTOBER, 1903.

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NOTATION.

ADOPTED OCTOBER 23D, 1890.

RESOLVED, that in the presentation of papers the Symbols of the Text-Book of the Institute of Actuaries, with the additions noted below, be followed when convenient, and that in any event the use of such symbols in other senses be avoided; that the letters denoting commutation columns, according to the system of Dr. Farr, customarily followed by American actuaries, be printed in plain "full-face" type; and that otherwise there be entire liberty as regards notation.

$$k_x = \frac{d_x}{l_{x+1}} = \frac{\mathbf{C}_x}{\mathbf{D}_{x+1}}.$$

$$u_x = \frac{l_x}{l_{x+1}}(1+i) = \frac{\mathbf{D}_x}{\mathbf{D}_{x+1}}.$$

S—Sum insured.

K—Cost of insurance—$q(S-V)$.

H—Single premium (alternative for A).

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VOL. VII. No. 30.

TRANSACTIONS.

OCTOBER, 1903.

PREFACE.

At the meeting of the Council, held on May 20th, 1903, it was voted "to print No. 30 of the *Transactions* as of the date of October 1st, 1903, the number to contain a brief account of the proceedings of the Fourth International Congress of Actuaries, with the usual list of Officers and Members of the Society."

At a later meeting, held on November 5th, 1903, it was voted to include also in No. 30 the papers which appear respectively on pages 527 and 539.

The official account of the detailed Proceedings of the Fourth International Congress of Actuaries will be published in due course by the Organizing Committee of the Congress.

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The Fourth International Congress of Actuaries.

At the meeting of the Third International Congress of Actuaries, held in Paris in June, 1900, an invitation was extended to the Congress by the Actuarial Society of America to meet in New York in 1903. This invitation was accepted and in accordance with the plans of the Permanent Committee on Actuarial Congresses the week beginning August 31st, 1903, was designated as the time of meeting of the Fourth Congress. The Council of the Actuarial Society of America undertook the duties of the Organizing Committee of the Congress.

On the invitation of the Organizing Committee the Hon. George B. Cortelyou, Secretary of the Department of Commerce and Labor in the United States Government, accepted the position of Honorary President of the Congress.

On the invitation of the Permanent Committee, the designation as Honorary Vice-Presidents of the Congress for their respective countries was accepted by members of the Ministries thereof, as follows:

AUSTRIA—Von Koerber, *President of the Council of Ministers.*

BELGIUM—Count de Smet de Naeyer, *President of the Council of Ministers, Minister of Finance and of Public Works.*

FRANCE—Trouillot, *Minister of Commerce.*

GERMANY—Count von Posadowsky-Wehner, *Imperial Secretary of State for the Interior.*

ITALY—Bacelli, *Minister of Agriculture and of Commerce.*

GRAND DUCHY OF LUXEMBOURG—Eyschen, *Minister of State.*

SPAIN—Dato, *Minister of Justice.*

SWEDEN—Westring, *Minister of the Interior.*

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The President and Secretary of the Actuarial Society of America were respectively elected President and General Secretary of the Congress at its first session.

The following named were elected as Vice-Presidents and Secretaries of the Congress for the respective countries as indicated:

COUNTRY.	VICE-PRESIDENT.	SECRETARY.
Belgium,	AMÉDÉE BÉGAULT,	FLORIMOND HANKAR.
Canada,	T. B. MACAULAY,	A. K. BLACKADAR.
France,	ALBERT QUIQUET,	H. DUPLAIX.
Germany,	DR. FERDINAND HAHN,	DR. ALFRED MANES.
Great Britain, *Australia*, *New Zealand*,	WILLIAM HUGHES,	ERNEST WOODS.
Holland,	Dr. J. H. PEEK,	J. F. WESTERBERG.
Sweden, *Norway*,	SVEN PALME,	A. PALMSTRÖM.
Austria, *Hungary*, *Italy*, *Japan*, *Mexico*, *Russia*, *Switzerland*,	SERGE DE SAVITCH,	PROF. ULISSE GOBBI.
United States,	RUFUS W. WEEKS,	DANIEL H. WELLS.

The sessions of the Congress were held in the rooms of The American Fine Arts Society, 215 West 57th Street, and were attended by about two hundred members, approximately one-third of those who qualified as members of this Congress. Eighteen countries were represented in the membership present and twelve governments appointed as official delegates certain of the members attending from their respective countries.

The Congress was opened on the morning of August 31st, 1903, by M. Omer Lepreux, the President of the Permanent Committee, who welcomed the members and presided over the formal organization of Congress as a deliberative assemblage.

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After the installation of the officers of the Congress, M. Lepreux introduced the Hon. George B. Cortelyou, Honorary President of the Congress, who delivered the following address:

MR. PRESIDENT AND GENTLEMEN:

"I account it a high honor and privilege to have a part in the exercises of this great International Congress. With ever-increasing interest I have learned of the work you have done and of the work you expect to do, and it gives me peculiar pleasure to address the members of an organization which is so intimately in touch with modern thought and progress, and which has for its concern subjects that relate so vitally to our common welfare. On behalf of the Government and people of the United States and speaking especially for the Actuarial Society of America, not alone its membership in this country, but the other branches of the Society so worthily represented by our friends and neighbors, the delegates from the Dominion of Canada, I extend to you a most cordial greeting. It is a happy circumstance that this Fourth International Congress of Actuaries should be held on the American Continent and in its metropolis.

"The great nations here represented have responded most cordially to an invitation most cordially extended. As your hosts, we have looked forward to this gathering with the hope and the purpose of making it worthy to take its place with the meetings that have preceded it, and if you do not find on every hand the evidences of our deep interest, it is because we have fallen short in our efforts to make this occasion an expression of our sincere good will and our friendly hospitality.

"In such an assemblage I shall hardly attempt to make more than a brief allusion to certain historical aspects of your work, but I am sure you will pardon me if I touch upon some of the features which show its scope and its helpfulness to mankind. And you will remember, too, that on this occasion I am speaking not only *to* you but *for* you.

"While insurance may have been known to the ancients, its principal development has been during late years through the exigencies of modern commerce. In the beginnings of mercantile dealings men were unable financially, as individuals, to bear great losses. They learned that in the division of risks among large numbers personal losses would be small. From this mutual practice in respect to losses that would otherwise have fallen heavily upon each came insurance on commercial lines, and, as has been well said, to-day no prudent person engages in any large business enterprise, dealing either in building, transportation, or manufacture, who does not seek shelter under a policy of insurance. It originated probably in the insurance of ships; it has been carried to almost every industry subject to losses through the act of man or the elements.

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"Annuities are of great antiquity. Life insurance, so called, was a mere wager between one man and another until the first permanent life company was organized. This, I am informed, was the Amicable Society, which lasted something over 161 years, after which its business was taken over by another office. The oldest life company was established in 1756 and still exists in London.

"The first permanent life company in this country—one of the great institutions whose officials are numbered in your gathering to-day—began business in 1843, followed at comparatively short intervals by other equally representative companies, which also through individual membership participate in your deliberations.

"We are told in the chronicles that deal with such matters that in ancient Rome the name actuary was given to the clerks who recorded the *acta publica* of the Senate, and also to the officers who kept the military accounts and enforced due fulfillment of contracts for military supplies. The first mention of the word in law is said to be in the Friendly Societies Act of 1819, where it is used in the vague sense, 'actuaries, or persons skilled in calculation.' It has been used with precision since the establishment of the 'Institute of Actuaries of Great Britain and Ireland,' in 1848, and 'The Faculty of Actuaries in Scotland,' founded at Edinburgh in 1856, and incorporated by royal charter in 1868.

"The Institute of French Actuaries and similar societies in Germany, Belgium, and other nations, have taken their place in the ranks of this great body of scientific workers and have had and now have worthy representation in your meetings.

"The Actuarial Society of America was organized in the spring of 1889. While it is young in years you have undoubtedly found it not only active and alert, but ready at all times to undertake and measure up to every requirement of its older and more experienced colleagues.

"'In modern times,' says a recent writer, 'the actuary is the mathematician of an insurance company, who makes the calculations on which its policy, plans, and prices are based, and applies the doctrine of probabilities to fire, life, or accident insurance. Although the material on which he works is theoretically furnished by the experience of his and other cognate companies, and the records of public and private bodies, with the common rules of interest, in fact it needs not only great mathematical capacity, but great practical sagacity to apply them to actual business; and no actuary of the highest class is a mere mathematician.

"'In the early days, when experience was still mostly to make, the actuaries were usually the presidents of their companies. In recent times a safe body of experience has accumulated which enables business men to head them, and the actuary's computations and advice relate to slighter variations or special plans. In accident companies the actuary needs to be, and usually is, a man

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of large practical acquaintance with different employments, their hazards, the meaning of given employment names, and those under which the more hazardous employments are disguised as less so; in fire insurance equally he must know the character of different risks.'

"It must be a source of satisfaction to you, as it is a matter of great interest to one who for the first time makes a critical study of your requirements, that membership signifies high attainments and admitted professional standing.

"Your Congress in many particulars occupies a unique position. First, the subject-matter of your deliberations is primarily scientific, based in fact upon what may be termed a distinct branch of applied mathematics. Second, it embraces in its wide scope the professions of law and of medicine, and its discussions contemplate the consideration of formal contracts and questions allied to various divisions of sanitary science. Third, the relation of this subject-matter, which has the attention of the Congress, to these academic subjects has to do in a most striking way with the great world of finance, and is intimately connected with financial institutions that are among the most potential of our modern economic factors; for these great institutions include not only those of life insurance, but the savings fund and the pension offices, and similar agencies which on the continent of Europe are in so many cases governmental institutions. Fourth, it is altogether probable and within the realm of safe statement to say that rarely, if ever before, has there met in this country a body of thinkers and workers more representative of the alliance of academic theory with the application of the principles of the learned professions to diversified interests which occupy a commanding position in the business and industrial world. This means for the Congress great responsibility and great influence.

"Gentlemen, your relation to all material conditions of life is fortunate, for you stand on the high plane of impartiality; you recognize in the broadest sphere of your calculations neither race, nor class, nor creed; you encourage thrift; you are the friend of the toiler as well as of those in high places of power and affluence; you carry light and cheer and comfort and hope into the earth's dark places. You stand for things that make for stability. You are the architects of firm foundations upon which rise institutions whose helpfulness is far-reaching and incalculable. Your study is life, and the extent of your influence is only equalled by its beneficence.

"And so I can and do most heartily congratulate you upon the character of your high calling and upon the splendid results that have thus far marked the progress of your work. I would, however, lose sight of what is perhaps the greatest good accomplished by these international meetings if, in referring to the scope of your duties and their relations to the actuarial science, I should

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forget to mention and to emphasize another and a wider influence exerted by such congresses. In all walks of human endeavor competition is keen, and the struggle for position and profit among individuals and among nations is active and unflagging. If the competition is directed into right channels, if such meetings as this, international in their character, bring together representatives from many countries for mutual interchange of thought and opinion on subjects of general interest, even though in many instances members are competitors, who can doubt their helpfulness and their trend toward better feeling?

"Like other organizations of abundant vitality and healthy growth, you will undoubtedly develop in your meeting sharp and persistent rivalry of thought and suggestion. But it will be on so high a plane that we shall all be great gainers by your deliberations. Let us have such rivalry, not only in your chosen profession but in the wider field of international commercial relations. The wholesome activity that springs from the right sort of competition is a guaranty of political peace among the nations of the world. The improved acquaintance which these meetings make possible as to both men and methods is one of the best safeguards against irrational jealousies. You meet upon common ground; you touch elbows in a common cause. The many really small differences disappear in the broad discussion of themes that enlist a common sympathy and support. There follows naturally and inevitably the great result of an increased knowledge of the subjects pertinent to your work, and of the mettle and merit of the men who devote their time and energy to the advancement of a science which finds to-day such fitting representation in the distinguished gathering it is my pleasure to address.

"I am glad indeed to greet you, not only as the representative of the Government, but of the Department of Commerce and Labor, which is fortunate in participating at the beginning of its career in so representative and noteworthy a meeting as this Congress. The officials of the new Department will watch your proceedings with great interest, for the more fully we study the scope of the law which created it, the more clearly appear the points at which our work touches the interests which you represent.

"You have chosen wisely in your designation of these meetings as a Congress. They are in the broadest sense representative—representative of the thought and progress of the nations whose delegates you have assembled. From your discussions and deliberations will come new principles and new methods in the science to which you are devoted, but greater and more beneficent than these will be the silent influences that spring from the good fellowship and better understanding fostered in the friendly meeting of representatives of many of the world's great powers."

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At the conclusion of his address Mr. Cortelyou read the following communication from the President of the United States:

"OYSTER BAY, N. Y., August 22, 1903.

MY DEAR MR. CORTELYOU:

I am peculiarly sorry to be unable to accept the invitation to be present at the opening of the Actuarial Congress. This congress has international significance, and few gatherings of business men are more important to the business welfare not only of this country but of all the nations represented. The bodies included in your gathering occupy a position of such leadership in the several communities from which they come that all considerations affecting their well-being are also of moment to our nation no less than to the other civilized nations of the globe. The importance of the meeting is very great, and to this importance I am fully alive. I am very sorry that I am unable to be present in person. Please express my congratulations and good wishes, as well as my regret at my absence, to the assembled bodies.

Sincerely yours,

THEODORE ROOSEVELT.

Hon. GEO. B. CORTELYOU,
Honorary President,
Fourth International Congress of Actuaries."

M. Lepreux made a brief acknowledgment, on behalf of the Congress, of the sentiments expressed by the Honorary President and for the courtesy extended by President Roosevelt. He then introduced the permanent presiding officer of the Congress, President Israel C. Pierson, who assumed the chair and addressed the Congress as follows:

"We are now organized as the Fourth International Congress of Actuaries. Our membership comprises men who are prominent in the domain of Actuarial Science. It includes official delegates of many Governments which foster and supervise one of the greatest and most beneficent of modern economics; members of many Actuarial Institutes and Societies whose object is to promote the science of life contingencies; Actuaries connected with many companies which are engaged in the practical application of this Science and have accumulated billions of dollars in Reserve Funds for the benefit and protection of the multitudes of lives which they have insured in every part of the civilized world. While it is a high privilege to be a member of this assembly, to be chosen to preside over its deliberations is a great honor, and I thank you with all my heart, my dear colleagues, for conferring this honor upon me by electing me President of this Congress.

"The Organizing Committee and the members of the Actuarial Society of America are under great obligation to the United States Government for the patronage and support so cordially given to this Fourth International Congress of Actuaries. In the name of the Society I express sincere thanks to the Government and to the Secretary of the Department of Commerce and Labor, Hon. George B. Cortelyou, who has been personally interested in the preliminary arrangements, and, as the representative of the United States Government, has kindly consented to accept the office of Honorary President.

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"We gratefully appreciate the courtesy manifested by the Governments of Foreign countries in according their patronage, and we extend our hearty thanks to them and to their Government Officials who have been good enough to allow the use of their names as Honorary Vice-Presidents.

"Much is due to the Permanent Committee on International Congresses of Actuaries, and especially to the President, Mr. Lepreux, and to the General Secretary, Mr. Bégault, for their untiring devotion to the duties of their respective offices, and for their enthusiastic efforts in behalf of this Congress, and we are gratified that they are present to assist at its opening. We are also indebted to the Correspondents of the Permanent Committee, and of the Organizing Committee for their valuable aid. In the name of the Actuarial Society of America, I beg them all to accept our most cordial thanks.

"That so many distinguished Governmental and Actuarial Delegates are our visitors is the cause of a gratification which it is difficult to conceal, but I cannot refrain from saying that the Actuarial Society of America is moved by a peculiar sense of filial pride and pleasure by the presence of so many representatives of the mother of us all, to assist in an event which is interesting, particularly to one of her children, and I may name William Hughes, president; Henry W. Manly, past-president, and other officers of the Institute of Actuaries, London. With somewhat kindred pride and pleasure we are delighted that the Faculty of Actuaries in Scotland is represented by N. B. Gunn, president, and by James Meikle, the venerable member and past president of the Faculty.

"It is an honor that the Third International Congress of Actuaries cordially accepted our invitation to hold the Fourth International Congress of Actuaries in the City of New York, and, considering the wideness of the oceans and the broadness of the lands, it is a compliment that so many of our friends have traveled such great distances to be our guests. We do not forget, however, that the underlying motive in taking these long journeys is to take part in these proceedings and to obtain the benefits which it is the purpose of these Congresses to confer.

"Most heartily I endorse the cordial words of welcome which our Honorary President has spoken. We are very happy to grasp again the hands and to look once more into the eyes of those whom we have had the pleasure of meeting at previous Congresses, and we are glad to make the acquaintance of those who are present for the first time. The Actuarial Society of America says to every one of you, Welcome to America, and to our hospitality. We welcome you as friends and brothers to this comparatively new country, where you will find many things different from those in other lands, as to the works of nature and the works of man

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and as to general conditions and customs, and we venture to hope that your visit will be attended with enduring pleasure and profit to you.

"Our American systems of life insurance were based on the science and experience which already had been established or had reached an advanced stage of evolution in some of the European countries notably in Great Britain. In our systems there may be no superiority, there may be defects. We trust that the discussions will be a benefit to us in these regards and perhaps profitable also to everyone.

"It is a matter of deep regret that of those who have participated in previous Congresses many are unable to attend this assembly, among whom I may mention the Presidents and other Officers of the 2nd and 3rd Congresses, Messrs. Young, Guieysse, Marie, Higham, Samwer, Lindstedt, Blankenberg, and others. It is a regret that we may not have the pleasure of their personal presence and the benefit of their assistance in the discussions, nevertheless we greet them in spirit and hope for a reunion in the future, perhaps in 1906. Mr. Blankenberg in a letter, expressed sorrow that he could not attend the Congress, but he sent his cordial greetings and said that the opening of the Congress on the birthday of their much beloved queen, Wilhelmina, is a coincidence very pleasing to the Hollanders.

"Some of the members or interested adherents of the previous Congresses have ceased from their labors since the reunion of 1900 in Paris. The limitations of our time prevent the mention of their names, but we recall our former colleagues in delightful memory. I may be permitted, however, to speak of one who was a member of the Actuarial Society of America, and so far as is known, was the oldest member of the entire Actuarial Fraternity, both as to years of age and as to years of service, Mr. William E. Starr. Born March 1st, 1812, he became the Actuary of the State Mutual Life Assurance Company in 1848, and dying January 13th, 1903, he was nearly 91 years old, and had been 55 years engaged in Actuarial work. He attended every meeting of the Actuarial Society, was a faithful councillor, and was deeply interested in all the proceedings in which he often participated. It may be said of him and of many of those whom we miss from our local or International Councils, including our first President, Mr. Mahillon.

"'Their ears are deaf to human praise,
Their lips, to mortals, mute.
But still their words deep echoes raise,
Their thoughts have endless fruit.'

"When in June, 1894, Mr. Léon Mahillon, then Director of the Government Department of Life Insurance, advocated the employment of the services of an Actuary in a life insurance

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measure which was under discussion in the Belgian Assembly, a deputy said 'Qu'est-ce qu'un Actuaire? Je n'en ai jamais vu.' Mr. Mahillon had encouraged Mr. Amédée Bégault in the work of translating into the French language Mr. George King's 'Text Book of the Institute of Actuaries,' which work was completed and published in 1894 with an elaborate introduction writtten by Mr. Mahillon. Being already impressed with Mr. Bégault's convictions that uniformity of symbols in Actuarial Science was a necessity, Mr. Mahillon was aroused by the remark of the Deputy, 'What is an Actuary? I never have seen one,' and thereupon decided that he would endeavor to convene Actuaries from all countries to consider the vital questions of Actuarial Science; to obtain uniform notation in the Science; to popularize life insurance theories and disseminate information concerning them among legislators and others; and to emphasize the office and the work of the Actuary. He secured the patronage of the Belgian Government, and the assistance of the Minister of Finance for the consummation of his plan to convene a Congress of Actuaries. Other Governments and Actuarial Institutes and Societies were invited to send delegates and the first International Congress of Actuaries was held on September 2–6, 1895, in the 'Palais des Academies' Brussels. The Minister of Finance, Mr. de Smet de Naeyer, representing the Belgian Government, as the Honorary President, in his opening address, extended a cordial welcome to the delegates and explained briefly the object of the Congress. Mr. Mahillion was chosen the effective President, and 'to him is due the almost miraculous organization and consummately skillful guidance of the First International Congress of Actuaries.' So successful was this First Congress as to attendance and interest that it was decided to hold one in each third year thereafter.

"The Second Congress was held May 16–20, 1898, in 'Staple Inn Hall,' London, under the auspices of and in celebration of the Jubilee Year of the 'Institute of Actuaries.' Mr. Thomas E. Young, President of the Institute, was chosen President of the Congress.

"The Third Congress occurred June 25–30, 1900, in the 'Palais de l'Economie et des Congres de l'Exposition Universelle,' Paris, under the patronage of the French Government, the Minister of Commerce, Mr. Millerand, as representative of the Government, being the Honorary President. The President of 'l'Institut des Actuaires Français,' Mr. Paul Guieysse, was chosen President of the Congress.

"The Permanent Committee on International Congresses of Actuaries was established at Brussels in 1895, to be a bond between the Actuaries and Associations in various countries; to prosecute investigations pertaining to Actuarial Science; to publish periodically a journal of events and of original contributions; and to co-operate with Organizing Committees in the preparation of the

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work of International Congresses. The first President was Mr. Mahillon, who was succeeded at his death by Mr. Omer Lepreux. Mr. Amédée Bégault has always been the General Secretary. This Committee has rendered most useful and beneficial services and should be cordially supported.

"It is impossible to measure or enumerate the results and benefits of the International Congresses of Actuaries. Some of them are; the establishment of a well-nigh universal medium of communication between Actuaries; conferences on subjects of common interest; organization of actuarial societies in Belgium, Germany, Holland, Italy, Austria and Japan; publication of Actuarial periodicals; and investigations and exact observations into particular mortality experiences.

"Since the meeting of 1900, in Paris, three independent and extensive mortality investigations have been completed. Two of them will be considered in the discussions of this Congress.

"The 'Institute of Actuaries' and the 'Faculty of Actuaries' Joint Mortality Investigation was undertaken in 1895. It is derived from the data of 1863 to 1892 inclusive, furnished by forty-one British Companies and three American Companies which contributed their British experience. The results of these investigations, including the experience on a large number of annuitants and of insured lives, have been completed and published in sections from 1899 to the present time and are considered as standards for the future. The Actuarial profession owes a debt of gratitude to Mr. Ralph P. Hardy, by whose presence here we are pleased and honored, Chairman of the Joint Committee, and to Mr. T. G. Ackland, Superintendent of the tabulations and the entire clerical work.

"The Committee of the three French Companies, 'Assurance Generales', 'Union', and 'Nationale', have finished their Tables of Mortality of Annuitants and of Lives Insured. They embrace the experiences of these Companies to January 1st, 1900, and add very valuable observations to their formerly published results, especially as to annuitants in what is known as the R. F. table The committee presented the first results to the Universal Exposition in April, 1900. Their completed work, published in 1902, is a royal octavo volume containing 375 pages and many charts arranged and printed in excellent form. The Committee, Messrs. H. Duplaix F. Oltramare and A. Quiquet, are entitled to the grateful acknowledgments of Actuaries everywhere.

"The fourth question considered at the Actuarial Congress in Paris in 1900, was 'Comparison of the rates of mortality in various occupations'. Mr. McClintock presented a paper 'On Special Investigations for the Comparison of Death Losses by occupation or otherwise'. The English version of that paper was read at the next metting of the Actuarial Society of America, October 25th, and 26th, 1900. The subject, and the compre-

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hensive method of treating it, so impressed the members that on motion a Committee was appointed, consistion of Messrs. Emory McClintock, B. J. Miller, J. G. Van Cise, R. W. Weeks and D. H. Wells, to consider the matter and to report to the next meeting of the Society. Mr. John K. Gore was subsequently added to the Committee. At the meeting of the Society on May 16th and 17th, 1901, the committee made a full report and presented a complete programme for 'A Specialized Mortality Investigation', the material to be furnished by the Life Companies of the United States and Canada, whose Actuaries were members of the Society, the work to be entered upon immediately, and the resulting statistics to be published by the Society before the meeting in New York of the International Congress of Actuaries, in September, 1903. Thirty-four Life Companies and the actuaries most cordially approved and assisted in carrying out the plan and furnished the desired data. The completed work makes a small quarto book of 479 pages. A copy of it has been presented to each member, as a souvenir of this Fourth International Congress of Actuaries. These published results of the investigation will be of value to life insurance interests generally and doubtless will be considered a rich contribution to Actuarial Science and Life Insurance Administration.

"I have mentioned briefly some of the benefits which these Congresses have given to Actuarial Science and to Actuaries. There are other advantages attending these conventions which cannot be described in words or be measured by any tangible standard. We meet as devotees to a Science which we magnify but although, convened from all parts of the world, we recognize in each other the living man, like ourselves as to attributes of mind and heart, character and purposes, human experiences and feelings, environments and life, and if it were not for these things the science would not exist. We become acquainted and, forgetting geographical lines and political limitations, are friends. May we not hope that these Actuarial Congresses, while they advance Actuarial Science and foster comity and friendliness, will contribute largely to the improvement of social economic conditions and will promote the early advent of that halcyon time, the day of the Universal Brotherhood of man.

"'And when that Brotherhood the world shall fill
And all the nations work its blessed will
Then, then shall dawn the age so long foretold,
The perfect flower of time, the age of gold.'

"The duties and responsibilities resting upon us are great and the questions before us are numerous and weighty. Since the time allotted for the consideration of these subjects is limited, shall we not give ourselves to the real business of this Congress

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with zeal, diligence, and fidelity in the confident expectation and with the fixed purpose that by our deliberations and discussions Actuarial Science shall be advanced and we, as well as the many others who will read the printed reports, shall be better prepared to solve the problems, discharge the duties and carry the responsibilities pertaining to the office and the work of the Actuary.

"It is not necessary to ask that you will accord to the President your cordial assistance during this Congress. That favor has already been graciously assured along with the honor which you have so kindly bestowed and which I again most gratefully acknowledge."

At the conclusion of the President's address M. Lepreux presented to the Congress certain messages of congratulation and good wishes received by him from some of the Honorary Vice-Presidents, and the Congress then proceeded to the consideration of the papers prepared by its members on the various subjects proposed for discussion.

The conduct of the formal sessions of the Congress followed closely the programme arranged by the Organizing Committee. The order in which the various subjects were taken up, the papers presented on each subject and the names of those who participated in the discussion are indicated in the following summary of the proceedings of each day.

Monday, August 31st.

A. M.

Subject, *The Improvement in Longevity.*

Papers.

On the Improvement in Longevity during the Nineteenth Century, by Mr. Warner of Great Britain.

La Prolongation de la Vie dans le Dix-Neuvième Siècle aux Pays-Bas, by Messrs. Paraira and Landré of Holland.

On the Improvement in Longevity in the United States during the Nineteenth Century, by Mr. J. K. Gore of the United States.

Subject discussed by Messrs. Gunckel and Manes of Germany; Peek of Holland; Raffmann of Hungary; Barrand, Hardy and

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King of Great Britain; Palme of Sweden; Craig, J. K. Gore, Hoffman, Lewis, McClintock, North and Van Cise of the United States.

P. M.

Subject, *War Mortality.*

Papers.

War Risks, with Special Reference to the War in South Africa, 1899-1902, by Mr. Schooling of Great Britain.

The Risk-Rate of the late Chino-Japanese War, by Mr. Schida of Japan.

War Mortality in the United States, by Mr. Hann of the United States.

Subject discussed by Messrs. Hardy and Schooling of Great Britain; Schida of Japan; Hann of the United States.

Subject, *Mortality among Non-Caucasian Races.*

Papers.

Notes on Mortality in India and some other Tropical Countries, by Mr. Thomson of Great Britain.

On the Mortality of the Japanese, by Mr. Yano of Japan.

Mortality among Non-Caucasian Races, by Mr. A. Hunter of the United States.

Subject discussed by Messrs. Chatham and King of Great Britain; Dawson and Hunter of the United States.

Subject, *Miners' Experience.*

Paper

Invalidität und Mortalität bei den bayerischen Knappschafts-kassen, by Mr. Eggenberger of Germany.

Subject discussed by Messrs. Raffmann of Hungary; Gerecke of Germany.

On Monday evening the members of the Congress and the ladies accompanying them, with other invited guests, attended a Reception, given to the Congress by the Actuarial Society of America, at the Fine Arts building. The guests were received by his Honor, Seth Low, Mayor of the City of New York, the Honorable George C. Cortelyou, Honorary President of the Congress, and Dr. Israel C. Pierson, President of the Congress.

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Tuesday, September 1st.

A. M.

Subject, *The New British Mortality Experience.*

Papers.

A Comparison of the O^M *Table of Mortality with the adjusted American Table*, by Mr. Hardy of Great Britain.

Brief Notes on the British Offices Mortality Experience, 1863-1893, by Mr. King of Great Britain.

Subject discussed by Messrs. Carment of Australia; Macaulay of Canada; Barrand, Cathles, Hardy, Hughes, King, Manly and Schooling of Great Britain; Raffmann of Hungary; Fox of New Zealand; Dawson, Hann, McClintock and Van Cise of the United States.

Subject, *Annuitants' Mortality.*

Paper.

Die Sterblichkeit der schweizerischen Rentner, by Mr. Kihm of Switzerland.

Subject discussed by Messrs. Duplaix of France; Gerkrath of Germany; Rosselet of Switzerland.

P. M.

The proceedings of this session consisted largely of a General Discussion and explanations relative to the work of the Committee of the Actuarial Society of America having charge of its recent investigation into the Experience of Thirty-four Life Companies upon Ninety-eight Classes of Risks. Questions concerning the work of the Committee were responded to by the Chairman, Mr. McClintock, and the discussion was carried on by Messrs. Chatham and King of Great Britain; Raffmann of Hungary; Barker, Dawson, McClintock and C. D. Wright of the United States.

On Tuesday evening the members of the Congress and their ladies, with other invited guests including the Mayor of the City of New York, were entertained at dinner at Sherry's by the officers of The Mutual Life Insurance Company of New York, The New York Life Insurance Company and The Equitable Life

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Assurance Society of the United States. Three hundred guests enjoyed the hospitality of the hosts of the occasion. The programme of the toasts was as follows:

Toasts.

Chairman,

The Honorable GEORGE BRUCE CORTELYOU,

Secretary of Commerce and Labor of the United States.

The President of the United States:

The Congress Cities—Brussels, London, Paris and New York:

Proposed by Mr. Granniss, Vice-President The Mutual Life Insurance Company of New York.

Responded to by Mr. Buls, Burgomaster of Brussels at time of First Congress, and Mr. Low, Mayor of New York City.

The Governments represented at the Congress:

Proposed by Mr. Alexander, President The Equitable Life Assurance Society of the United States.

Responded to by Dr. Eucken-Addenhausen, Delegate of the Imperial German Government, and Mr. Tardit, Delegate of the French Government.

The Actuarial Bodies represented in the Congress:

Proposed by Mr. McCall, President New York Life Insurance Company.

Responded to by Mr. Hughes, President Institute of Actuaries, London, and Mr. Lepreux, President Association of Belgian Actuaries and President Permanent Committee of Congresses.

The Ladies:

Proposed by the Chairman.

Responded to by Mr. Hegeman, President Metropolitan Life Insurance Company.

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WEDNESDAY, SEPTEMBER 2ND.

A. M.

Subject, *The Probable Future Course of the Interest Rate.*
Papers.

Der wahrscheinliche Lauf des Zinssatzes in der Zukunft, by Mr. Grossman of Austria.

Note sur les variations du taux de l'intérêt en Belgique pendant la période contemporaine, by Mr. Hankar of Belgium.

The Probable Future Course of the Rate of Interest, by Mr. Burn of Great Britain.

Subject discussed by Messrs. Carment of Australia; Hankar of Belgium; Macaulay of Canada; F. Hahn and Manes of Germany; Bottini of Italy; Barrand, Burn and Gunn of Great Britain; Fackler, Lewis and Van Cise of the United States.

Technical Subjects.
Papers.

Gemischte Capitalversicherung mit an einem bestimmten Termine erwachsendem unbedingten Anspruch auf Prämien-Rückgewähr, by Mr. Hoppe of Austria.

Sur l'emploi simultané de lois de survie distinctes, by Mr. Quiquet of France.

Notes on Actuarial Functions, by Mr. Elderton of Great Britain.

On the Development of Tables derived from an Abridged Expression for the Calculated Expectation of Future Life, by Mr. Meikle of Great Britain.

Theorie der Leibrenten mit Rückvergütung der Baareinlagen abzüglich der bereits bezogenen Renten, by Mr. Dizler of Germany.

On a Rational Method of Loading, by Mr. Peek of Holland.

Mr. Elderton's and Mr. Meikle's papers were discussed by Mr. Henderson of the United States.

On Wednesday afternoon, through the courtesy of the Interborough Railway Company, a special train conveyed a number of the members on a trip over the elevated lines. Later in the afternoon the members and their ladies, to the number of two

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hundred and fifteen, journeyed by a special train on the Long Island Railroad to Manhattan Beach. Dinner was served at the Manhattan Beach Hotel and the party was entertained at the exhibition of Pain's Fireworks and later at the theatre at Manhattan Beach.

Thursday, September 3d.

A. M.

Subject, *Insurance of Impaired Lives.*

Paper.

Die verschiedenen Systeme der Versicherung von geschwächten Leben in Deutschland, by Mr. Gunckel of Germany.

Subject discussed by Messrs. Gerecke and Gunckel of Germany; Landré of Holland; Palme of Sweden; Fackler and Hann of the United States.

Subject, *Health Insurance.*

Papers.

Über die Herstellung von Invaliden-Sterbetafeln, by Mr. Eggenberger of Germany.

On the Question of Health Insurance from the Practical Point of View, including Tables, by Mr. Janse of Holland.

L'assurance contre la maladie en Belgique, by Mr. Duboisdenghien of Belgium.

Sickness Assurance by Friendly Societies in Great Britain, by Mr. Watson of Great Britain.

Health Insurance in the United States, by Mr. Messenger of the United States.

Subject discussed by Messrs. Hankar of Belgium; Eucken-Addenhausen of Germany; Chatham, Hardy and King of Great Britain; Gobbi of Italy; C. C. Hall and Messenger of the United States.

Subject, *The Growth of Life, Health and Accident Insurance, Annuities, Pensions and other Operations requiring Actuarial Advice.*

Papers.

Life Assurance in Australasia, by Mr. Carment of Australia.

Industrial Life Assurance in Australasia, by Mr. Eedy of Australia.

Friendly Societies in New South Wales, by Mr. Trivett of Australia.

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Développement de l'Assurance Vie, Assurance dite "Assessment," Sociétés Fraternelles, Assurances contre les Accidents, Assurances garantissant la Responsabilité civile des Patrons Assurances contre la Maladie, Capitaux Différés, Rentes Viagères, Pensions de Retraite pour la Vieillese, Pensions d'Ouvriers, et toutes autres opérations nécessitant l'avis des Actuaires: ce que l'on peut constater en Belgique, by Mr. Lembourg of Belgium.

On the Growth in Canada of Life Insurance, Assessment Insurance, Friendly Societies, Accident Insurance, Employers' Liability Insurance, Health Insurance, Pure Endowment Business, Annuity Business, Old Age Pensions, Workmen's Pensions, and other operations requiring Actuarial Advice, by Mr. Blackadar of Canada.

Das Wachstum der deutschen Lebensversicherung, by Mr. Lindemann of Germany.

Die Entwicklung der deutschen Arbeiter-Versicherung, by Mr. Meyer of Germany.

The Progress of Provident Institutions in the United Kingdom, by Mr. Brabrook of Great Britain.

On the Growth of Life Insurance, Assessment Insurance, Pure Endowment Business and Annuity Business, by Mr. Chatham of Great Britain

The Growth of Accident and Employer's Liability Insurance in Great Britain, by Mr. W. R. Strong of Great Britain

Old Age and Workmen's Pensions in Great Britain and Ireland, by Mr. Woods of Great Britain.

On the Growth of Life Assurance in Japan, by Mr. Aso of Japan.

Growth of Assessment Insurance in Japan, by Mr. Awadzu of Japan.

Report for the United States of America on the growth and progress of Institutions and Conditions requiring Actuarial Advice, by Mr. Fackler of the United States.

Subject discussed by Messrs. Carment of Australia; Eucken-Addenhausen of Germany; Awadzu of Japan; Fox of New Zealand; Hann of the United States.

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P. M.

Subject, *University Instruction upon Actuarial Subjects.*

Papers.

On the Instruction given in Canadian Universities on Actuarial Subjects, by Mr. Sanderson of Canada.

De l'instruction donnée en France sur les sujets traités par les actuaires, by Mr. Picquet of France.

Vorlesungen über Versicherungs-Wissenschaft an deutschen Hochschulen, by Mr. Manes of Germany.

Über versicherungsmathematischen Unterricht an den Universitäten, by Mr. von Bortkiewicz of Germany.

On the Instruction given in Universities on Actuarial subjects, by Mr. Young of Great Britain.

Notiz betreffend den Unterricht der Versicherungs-Wissenschaft auf der Universität, by Mr. Moser of Switzerland.

On Instruction given in Universities and Colleges on Actuarial Subjects, by Mr. De Boer of the United States.

Subject discussed by Messrs. Macaulay of Canada; Gunckel and Manes of Germany; Burn, Hardy and King of Great Britain; Craig, Glover, J. H. Gore, J. K. Gore, Lewis, Moir, Nichols and Sheppard of the United States.

Subject, *The Protection of Wives and Children against Claims of Creditors.*

Papers.

The Protection of Life Policies against the Claims of Creditors, by Mr. Duckworth of Australia.

Existing Legislation for the Protection of Wives and Children, as Life Insurance Beneficiaries, against the Claims of Creditors, by Mr. Goldman of Canada.

Note sur les dispositions de la législature francaise relatives á l'assurance sur la vie au profit de la femme et des enfants, by Mr. Cosmao-Dumanoir of France.

Des lois actuellement en vigueur pour la protection des épouses et des enfants, en tant que bénéficiaires de l'assurance sur la vie, contre les réclamations des créanciers, by Mr. Lefort of France.

Schutz der Frauen und Kinder als begüngstigte Personen in der Lebensversicherungs-Police, by Mr. Moldenhauer of Germany.

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On existing Legislation for the Protection of Wives and Children, as Life Assurance Beneficiaries, against the Claims of Creditors, by Mr. Phelps of Great Britain.

Über die Rechte der begünstigten Frau und Kinder aus der Lebensversicherungs-Police, speziell den Gläubigern des Kontrahenten gegenüber, by Mr. J. van Schevichaven of Holland.

Lois actuellement en vigueur en Espagne pour la protection des épouses et des enfants, en tant que bénéficiaires de l'assurance-vie, contre les réclamations des créanciers, by Mr. Maluquer y Salvador of Spain.

Laws Protecting Life Insurance against Creditors, by Mr. Lewis of the United States.

Subject discussed by Messrs. Carment of Australia; J. Van Schevichaven of Holland; Gerkrath and Walther of Germany; Burridge of Great Britain; Van Cise of the United States.

On Thursday evening the members and their ladies, with other invited guests, were entertained at a Reception and Musicale by the officers of the Metropolitan Life Insurance Company, whose spacious and elegant building on Madison Square was thrown open for this occasion.

Friday, September 4th.

A. M.

Miscellaneous subjects, as indicated by the titles of the papers.

Papers.

On the best plan for preparing and publishing Government Statistics concerning Dangerous Occupations and the Mortality therein, by Mr. Harms-Tiepen of Holland.

Das Abschliessen der Bücher von Gesellschaften, welche Versicherung in verschiedenen Ländern betreiben, by Mr. S. R. J. van Schevichaven of Holland.

Über die Hauptbestimmungen der neuen schwedischen Versicherungsgesetze, by Mr. Lundgren of Sweden.

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Valuation, in Actions for Damages for Negligence, of Human Life Destroyed or Impaired, by Mr. Dawson of the United States.

Relationship of Initial Expenses and Selection to Valuation, by Mr. Moir of the United States.

Remarks on their respective papers were made by Mr. van Schevichaven and Mr. Dawson. Mr. Moir's paper was discussed by Messrs. Carment of Australia; McDougald of Canada; Gunn of Great Britain; Raffmann of Hungary; Trefzer of Switzerland; Barker, Dawson, C. C. Hall, Hann, Ireland, McAdam, McClintock, Moir, Wells and W. C. Wright of the United States.

P. M.

Subject, *The Province of State Supervision of Life Insurance Companies.*

Papers.

Du contrôle par l'Etat des entreprises d'assurances privées, by Mr. Maingie of Belgium.

Die Staatsaufsicht über die Lebensversicherungs-Gesellschaften in Deutschland, wirtschaftliche und juristische Grundsätze, by Mr. Manes of Germany.

On the Province of State Supervision of Life Insurance Companies, by Mr. Chisholm of Great Britain.

Forme donnée en Suisse au contrôle de l'Etat sur les Sociétés d'Assurances sur la Vie, by Mr. Rosselet of Switzerland.

In addition to the discussion on these papers the programme provided for a general discussion on

The Province of State Supervision of Life Companies, whether (1) Confined to securing publicity; or (2) Securing publicity and Solvency; or (3) Securing publicity and solvency, and suppressing practices which violate the principles of equity; or (4) Securing publicity and solvency, and taking part in the determination of methods before their adoption by companies.

Subject discussed by Messrs. Macaulay of Canada; Duplaix of France; von Knebel Doeberitz and Manes of Germany; Chatham of Great Britain; Raffman of Hungary; Bottini of

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Italy; Schida of Japan; San Galli of Russia; Rosselet and Trefzer of Switzerland; Garfield, J. H. Gore, Hann, Lewis, McClintock, St. John, Van Cise and Weeks of the United States.

Subject, *The Technical Principles which should be Observed in State Supervision.*

Papers.

Die Bedeutung des Prämienreservefonds nach dem deutschen Privatversicherungsgesetze, by Mr. Broecker of Germany.

Die allgemeinen technischen Grundsätze, welche bei der staatlichen Kontrolle der Lebensversicherungs-Anstalten im Hinblick auf die Internationalen Interessen des Versicherungswesens zu beachten sind, by Mr. Schönwiese of Germany.

Die technischen Grundsätze, welche bei der staatlichen Kontrolle zu beobachten sind, by Mr. Trefzer of Switzerland.

Subject discussed by Messrs. Quiquet of France; Broecker of Germany; Trefzer of Switzerland.

On Friday evening representatives of the official delegates from the various countries and actuarial societies taking part in the Congress, together with the members of the Organizing Committee, were entertained at dinner at Delmonico's by William Hughes, Esq., the President of the Institute of Actuaries.

Saturday, September 5th.

A. M.

The discussions still unfinished, on subjects presented at previous sessions, were completed.

The President, in a brief address, expressed his thanks to the members, officers and assistants of the Congress and surrendered the chair to the Honorary President.

Resolutions of thanks to the officers of the life companies which entertained the Congress at dinner on Tuesday evening, to the management of the Interborough Railway Company for the excursion over the elevated lines on Wednesday, to the officers of the Metropolitan Life Insurance Company for the entertainment on Thursday evening, to the City of New York in the person of its Mayor, and to the Honorary President and the other officers of the Congress, were adopted by the members present.

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On the invitation of the German Society for Insurance Science, extended by its President, Dr. Ferdinand Hahn, a resolution was adopted to hold the meeting of the Fifth Congress in Berlin in 1906.

The Honorary President extended to the members of the Congress a cordial invitation to visit those bureaus of the United States Government at Washington whose work is allied with the subjects covered in the work of the Congress, and, with the expression of best wishes for the future progress of the societies and institutions represented in the Congress, declared closed the business sessions of the Fourth International Congress of Actuaries.

The closing banquet of the Congress took place at Delmonico's on Saturday evening. President Pierson presided and the toasts were responded to as indicated in the following programme:

Toasts.

1 *The President of the United States.*

2 *The Fourth International Congress of Actuaries.*
Responses by Honorary President and M. Serge de Savitch, Delegate from Russia.

3 *The Permanent Committee.*
Responses by its President and Secretary.

4 *The Oldest Life Office—The Equitable of London.*
Response by its Manager Mr. Manly.

5 *The Mother Society—The Institute of Actuaries.*
Responses by its President and Mr. Ralph P. Hardy.

6 *The Sister Societies.*
Responses by the President of the Faculty of Actuaries of Scotland and M. Albert Quiquet.

7 *The Fifth International Congress of Actuaries.*
Responses by Dr. Ferdinand Hahn President of the German Society for Insurance Science and Dr. Alfred Manes Secretary of the Society.

On the morning of Monday, September 7th, the members of the Congress, with their ladies and other invited guests, including the Honorary President and the other officers of the Congress, participated in an excursion on the steamer "City of Troy." The party was taken down the harbor and up the East River as far as

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North Brother Island and returning the steamer proceeded up the Hudson River to West Point, which was reached at four o'clock, P. M. The party was received by Col. A. L. Mills, the Superintendent of the Military Academy, and after visiting the public buildings of the Post and witnessing the evening dress parade of the Battalion of Cadets the party returned to the steamer, which during the night proceeded to Albany.

On Tuesday morning the party visited the Capitol and in the rooms of the Insurance Department were received and welcomed by the Hon. Francis Hendricks, Superintendent of Insurance of the State of New York. Luncheon followed at the Fort Orange Club where the party was received by George H. Thatcher, Esq., president of the Club, assisted by Mrs. Thatcher and other ladies of Albany.

In the afternoon a portion of the party returned to New York by special train and the other members journeyed westward to Niagara Falls. From that point, in pursuance of a plan arranged by the Canadian members of the Actuarial Society, they made a trip through Canada, enjoying at Toronto and Montreal the hospitality of the officers of the principal life companies of those cities.

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The Recent Actuarial Congress.

A Review of the Topics, Discussed Thereat, Which are of Interest to those Engaged in the Field Work of Life Insurance.

JOHN TATLOCK.

(An address delivered before the National Association of Life Underwriters in Baltimore, Md., on October 15th. 1903.)

A distinguishing characteristic of our day is the very general recognition of the value of organized and formal conference. It is true that the underlying idea is not new. It exists as a basal principal in all forms of constitutional government ; legislative enactment depends primarily upon prescribed forms of discussion. Deliberative Boards and Commissions for the examination of questions affecting national interests have been the recourse of Ministers for some generations, and the idea has found its latest and highest development in the reference of questions at issue between nations, which were formerly decided by an appeal to arms, for settlement in the—temporarily at least—calm, judicial and well-tempered atmosphere of the Hague Tribunal. The great scientific societies of the world now count their periods of continuous life and activity by one or more centuries, and many associations for the advancement of humanitarian interests and progress in the well-being of mankind have reached a ripe old age. But it is the present generation which has seen the rapid and pervasive extension of this idea of association for conference and discussion. Members of every recognized profession, perhaps one might say of almost every trade, now meet at periodical intervals, and in some organized form, for the furtherance and

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development of their particular interests. In the domain of that large and increasing field of commercial and economic enterprise, with which you and I are connected, this National Association of Life Underwriters, which I have the honor to address to-day, is a striking example of the belief in the benefits to be secured by the application of the principle stated and that from a dignified interdependence in matters and questions affecting the common good is to be derived the advancement of individual interests.

So also in this generation the bounds and limits of association have been extended. In several countries there have existed for many years societies and institutes composed for the most part of the actuarial officers of life insurance companies, but including also government officers connected with the management of State Pension and Annuity Funds, Government Insurance Offices, organized and carried on not only for the benefit of the citizen but also for the employee of the State, State Savings Banks and other public and private institutions requiring, for their proper management and conduct, more or less of actuarial advice and supervision. But it was not until 1895 that, in accordance with a plan conceived and carried out by the then Director General of the Belgian Savings Bank and under the auspices of the Belgian Government, there met at Brussels the First International Congress of Actuaries. Comprising members from sixteen countries, representatives of government offices and departments and of private enterprises, including life insurance companies, the recurrence of the meeting of the Congress was established and assured by the formation of a continuing body, composed of representative members of the Congress from different countries, entitled the Permanent Committee, in accordance with whose plans there met in New York in the week beginning August 31, 1903, the Fourth International Congress of Actuaries. The membership of this Congress was diversified as had been that of the previous Congresses, a dozen countries being represented, and nearly all by members of government departments designated as official delegates to the Congress by the authorities of the respective nations from which they came. The United States Government gave its official recognition to the Congress by the courteous acceptance by the Hon. George B. Cortelyou, Secretary of the Department of Commerce and Labor, of the post of Honorary President of the Congress, and by the appointment by

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President Roosevelt, as official delegates of the United States Government, Hon. Carroll D. Wright, Commissioner of Labor; Hon. James R. Garfield, Chief of the Bureau of Corporations and Hon. S. N. D. North, Director of the Census.

While the subjects discussed in the scientific work of the Congress cover a wide range, topics relating more or less directly to the practice of life insurance, or allied thereto, naturally occupy a place of some prominence, and it was with the idea, that those whose lives are devoted to the prosecution of efforts which tend to the upbuilding and onward progress of that great institution and the further extension of its benefits might find something of interest in a brief review of a portion of the questions presented to the Congress, that the invitation, extended by the officers of this Association to address you on this occasion, was accepted.

Of general interest is the question of the Duration of Human Life and the increase—or the reverse—in Longevity during the past century. On this subject, those who are engaged in the business of life insurance are naturally supposed to be possessed of the most authoritative information obtainable, and I have no doubt but that, in the respective communities in which you dwell, many of you are continually approached with inquiries relative thereto. Three papers on this topic were presented to the Congress. The respective authors dwelt in the first instance upon the quality of the data and material available which, as you well know, is not of a high order, due to the crude and often erroneous methods used in the collection of statistics relating to population and to the records of births and deaths; which methods, though greatly improved in Great Britain for instance in the last half of the nineteenth century and in our own country in the last quarter, were of such a nature before those periods as to render conclusions, based upon data collected in the first fifty or seventy-five years of the century, worthy of acceptance to but a limited degree. This fact should be borne in mind in the consideration of any statements relative to the rate of mortality, or conclusions as to the duration of human life, based upon returns concerning the general population. Mr. Warner, the Actuary of the Law Union and Crown Insurance Company of London, showed in his paper that "there is a distant decrease in the rate of mortality as the century progresses, taking all ages into consideration," but that "the weight of the improvement falls on the early years of

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life." This result, based by Mr. Warner on the Registrar-General's Returns for England and Wales, is in accordance with the prevailing understanding that infant and child life has been the principal beneficiary of the improvements in sanitary conditions and in the general conditions of life, to which we are accustomed to refer as indisputable evidence of our progress in civilization. Indeed, Mr. Warner showed further that for male lives of the age of twenty-five years and over, the improvement in longevity, from 1840 to 1900, is less than one year, and for female lives less than two years, while taking lives above the age of fifty-five years a diminution in average longevity appears, instead of an increase.

Mr. Gore, the Actuary of the Prudential Insurance Company of America, submitted an investigation based upon the "available mortality statistics of some of the larger cities (of the United States) whose records are assumed to be reliable, especially during the latter half of the century. A comparison of the death rates of these cities at different periods should show the probable tendency of the death rate of the country, although, of course, it cannot measure that death rate." From his investigations Mr. Gore developed conclusions substantially in accordance with those reached by Mr. Warner, namely, that there was a large decrease in the death rate at the youngest ages, a small decrease up to age fifty and an increase thereafter, especially in the oldest ages." It is worthy of notice, I think, that the results for England as stated show the change from an increase to a decrease to take place at about age fifty-five years, while in the United States it seems to take place at about the age of fifty years. An important feature of Mr. Gore's paper is contained in the information which it affords in reference to the change in the rate of mortality from certain specified diseases. Taking the statistics of the groups of cities on which Mr. Gore bases his investigations, for the period of thirty years from 1870, it appears that there has been a well-defined decrease in the rate of deaths from typhoid fever, both in the North and South ; a notable decrease in deaths from phthisis, accompanied, however, by an increase in the deaths from pneumonia and bronchitis, while the deaths from apoplexy and diseases of the heart and kidneys show a large increase in rate. The apparently well marked decrease in deaths from phthisis may, as pointed out by Mr. Gore, "be partially accounted for by the fact that some cases diagnosed formerly as phthisis are

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now classified differently, especially as bronchitis and pneumonia, and the increase in the rate from pneumonia and the very slight increase from bronchitis may bear out this theory to some extent." It is, however, to be noted in this connection that if the results pertaining to phthisis, pneumonia and bronchitis are grouped together the aggregate still shows a well-defined decrease in the death rate from these diseases due, it may be concluded, to a decided actual decrease in the rate from phthisis. In the results of an investigation restricted to the mortality experience in the Netherlands, Messrs. Paraira and Landré of Amsterdam, showed that the maximum of the expectation of life has increased about nine years, interesting as showing the results to be obtained in a given locality by improvements in sanitary science and in general conditions of life, the improvement, however, being most marked in the period of infant life. To sum up, it cannot be said that there is any real evidence that the duration of adult life has increased to any great extent; such improvement as appears for the whole of life is mostly due to a decrease of mortality at the periods of infancy and childhood; but it may be said that all those influences of modern life, which seem to tend to greater health and a deferment of the time of death, have added something to the stock of vitality of healthy human lives and that general consent will not be given to the statement of one of the speakers at the Congress, to the effect that the evidence "indicates not an addition to the vitality of the strong, but a diminution of the fatalities of the weak."

The subject of War Mortality was taken up by Mr. Schooling, the Actuary of the Prudential Assurance Company of London, in a paper which is of special interest to citizens of the United States, because it discusses the mortality experienced in active service by militia and volunteers, the main resource of this country in the unfortunate event of extended hostilities either within or without our own borders. Mr. Schooling reviews the experience of the South African war. He finds, as was to be expected, that the mortality of officers from wounds was greatly in excess of that experienced by the men, while the mortality from disease was less. Marked differences between the mortality experienced by the Regulars, the Yeomanry and Colonial troops are shown, and as the aggregate figures covering the whole period of the war, which show these differences, illustrate also the

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difference in mortality as between officers and men, I venture to quote them in this place:

YEARLY DEATH RATES.

	OFFICERS.	MEN.
Regulars	5.4%	3.9%
Yeomanry	6.9%	5.5%
Colonials	4.4%	3.0%

These figures show the total mortality both from battle and disease. It must be remembered that they show only the actual losses due to service in face of the enemy; they do not cover the additional risk, which must also be regarded by an insurance company which grants policies covering war insurance, namely, the risk of deterioration of the whole class of lives insured under such policies, lives not lost on the battlefield nor passing away in hospital, but impaired by the exigencies of service and the unhealthy conditions of camp life, the future mortality under which is not provided for without an extra charge, doubtless at least equal in amount to that necessary to cover the actual risk of field service during a period of extended hostilities. On this subject, Mr. Schida, of Japan, contributed a paper dealing with the mortality of the war between China, and Japan in 1894 and 1895, a war noted for its terrible carnage on both sea and land and distinguished also by the fact that the army losses from disease alone were nearly *eight and one half times* the losses in battle. Mr. Hann, of the Equitable Life Assurance Society, contributed a painstaking and exhaustive examination of the mortality experienced in the military and naval forces of the United States during the several wars in which we have been engaged. He found an extra mortality during the war of the Rebellion of about ten per cent., a result far in excess of any European experience during the latter half of the nineteenth century except that of the Crimean war. He points out the interesting fact that the sanitary condition of the army of the United States in time of peace has vastly improved; "since 1872, the death rate from all causes is about forty per cent. of what it was at that time; and the death rate from sickness alone has fallen almost as much." He shows also that the experience of an Army and Navy class covering a period of twenty years from 1881, and including about 10,000 policies exposed to risk, results in an excess charge per annum

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of about one-half of one per cent., a result which is in agreement with the established charge of some life insurance companies, mainly British, assuming professional military risks in time of peace.

Probably no subject before the Congress attracted more attention, nor excited more earnest discussion, than that of the future Rate of Interest. Of importance to all investors, it has a peculiar significance to life insurance companies. As pointed out by more than one speaker, on account of the large proportion of endowment policies, as well as other contracts involving large premiums and reserves, now on the books of the life companies, fluctuations in the rate of interest have more bearing upon life contracts than fluctuations in the rate of mortality. Many interesting facts and statements were brought out in the discussion on this subject, but the time at my disposal does not admit of more than the mere mention of the most pertinent and striking, namely; that the increase in gold production does not affect permanently the rate of interest; that modern facilities for the transfer of money tend to equalize the rate at any given date in all the financial centers; that the observed facts show that it is an utter fallacy to hold that the abundance of money or the progressive accumulation of wealth produce low rates of interest; that the controlling factor which determines the rate of interest "depends upon the estimates formed in men's minds of what the future productiveness of capital will be;" and the significant fact, closely correlated with the slight but general increase in the rate of interest now going on, that all government obligations, with the exception of those of the United States, have fallen in price in the last six years. As to conclusions for the future, to quote first from the authors of the papers presented on this subject, Dr. Grossman, of Vienna, considered that at least interest will go no lower; Mr. Hankar, of the Belgian Savings Bank, showed that for Belgium a positive tendency to increase is noticeable; Mr. Burn, of the Prudential Assurance Company of London, argued that the general tendency in the rate of interest is to fall. Other speakers expressed opinions, that any present increase cannot be considered as permanent; that the rate will not be higher than at present; that there will be no further decrease; that "the reaction against the excessive depression in the rate of interest brought on about the year 1896, by the extreme accumulation of cautious and

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timid capital, has produced a reaction in the opposite direction, of which we are not yet able to see the limits, and it is quite conceivable that it may go on to a greater extent than is generally believed;" that "there is no reason whatever to believe in the permanent and secular diminution of the rate of interest." Of course the bottom must be reached at some time, and many believe that the bottom was actually reached six years ago.

It was probably a surprise to many members of the Congress to learn of the many attempts, extending over nearly sixty years, to engraft into the insurance business of this country the division of Health Insurance. In an historial review of this subject, confined to the United States, Mr. Messenger, the Actuary of the Travelers' Insurance Company, traced the history of the numerous attempts, mostly ending in failure, to follow in the footsteps of the British Friendly Societies in providing indemnity to the wage-earner for loss of earnings during periods of illness. While the lack of attainment of success was due somewhat to the incompetence of the management of the American institutions, in their failure to realize the difficulties and requirements of the problem, the lack of interest and of appreciation on the part of the class to be benefited must be largely held responsible for the non-success of those first-established institutions. The results of the assumption of this class of business, during the last six years, by the strong and energetic accident companies of this country will be looked for with interest. On this subject, Dr. Eucken-Addenhausen of the Imperial German Department of the Interior, spoke of the State Health and Old Age Insurance, obligatory upon the people of the German Empire whose income is less than two thousand marks per annum, covering practically all the wage-earners of the country. He stated that the reasons for compulsory insurance against sickness are, that the health of the people shall be improved; that a better standard of living shall by such insurance be maintained, and that a higher degree of fitness for military service shall thereby be reached. As you know the ramifications of this scheme of the German State, for providing against illness and for old age, are of enormous extent and the results of its operation are watched with careful attention by economists of all nations. One fact may be noted, that the establishment of this State insurance has given an enormous impetus in Germany to the business of the private life insurance

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companies. Similar State schemes have been proposed by publicists of other countries as remedies for reducing the friction of the present-day industrial situation, but it is a serious question, especially under a really popular form of government, if the advantage to be gained in providing in sickness and old age for those who in active life, and under the most favorable circumstances, merely live from day to day, would justify the necessary increase in the burden of taxation.

Instruction on Actuarial Subjects in colleges and universities at home and abroad, was a theme that received due attention from the members of the Congress. The consensus of opinion was that, in the broadening of the curriculum of our educational institutions, the subject of life insurance may properly find a place as one branch of economics, but those more nearly in touch with the subject disclaimed any idea of such a degree of practical instruction as is required by those who intend to take up the work of the office or the field. It was clearly recognized that only in those places can the requisite training be obtained.

Mr. M. M. Dawson presented a paper in a field which has hitherto received but slight attention from actuaries, so far as the formulation of rigorous and scientific methods is involved. Under the title of "Valuation, in Actions for Damages for Negligence, of Human Life, destroyed or impaired," the author considered the cases, or classes of cases, in which human life is destroyed or its energies or activities injured or impaired, which come before the Courts for allowance of compensation to the party injured or his or her representatives in case of death. He shows in a very complete manner how these cases may be adjusted by means of recognized actuarial principles and data and argues with reason and sound judgment that the admission by the Courts of actuarial advice and testimony, in the class of cases under consideration, would tend to the attainment of a higher degree of real justice in the final decisions rendered in these cases than is now the fact. The very general reluctance of the American Courts to admit actuarial testimony as to the value of human life, with their preference, in damage cases for instance, for relying upon the rough estimates formed out of the feelings and prejudices of juries, has long been a subject for remark, and the criticisms made by Mr. Dawson on this point will probably be recognized by many as exceedingly pertinent.

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In mentioning what is known as the one year term plan I am probably directing your attention to a subject with which you possess considerable familiarity, in view of the widespread discussion to which this plan has been treated from many sources in the last few years. For the attainment of the same ends sought to be reached by the use of that plan, Mr. Moir, the Actuary of the Provident Savings Life Assurance Society, presented in a paper written for the Congress, an elaboration of a system devised by Mr. Dawson, which system, rigorous as to mathematical form and sound so far as resting upon scientific principles is concerned, was characterized by one of the speakers as "the most cautious, prudent and conservative system of that kind which has ever been proposed." Taking advantage of the fact, which is an accepted axiom of the business, that the effect of medical selection is to secure a low rate of mortality during say the first five years of insurance, the effect of the use of the method proposed is to enable new and struggling companies to avail themselves of the light mortality in the early years of insurance "as a direct offset against initial expenses." For the accomplishment of this purpose this method presents advantages greatly superior to those of the one year term plan or indeed of any other similiar method yet proposed. It presents at once a feature which claims approbation in that, under this method, "those policies in which the investment element is more pronounced will have a smaller allowance for initial expense. The writer considers this condition to be quite logical." In this opinion it is my privilege to concur. In the ensuing discussion, some criticism of the method presented was directed to the fact that "it confounded saving from mortality with expense, two subjects that ought to be kept definite and distinct." It was even asserted "that these two elements have no acquaintance with one another." But the greater part of the remarks was in the direction of satisfaction on the whole with the present system of net valuation, accounting rigidly for every actual premium received, and with the expression by some present of the fear lest a tendency to deviate from that principle is in the direction of a loss of strength and a weakening of recognized standards of solvency.

In a convention including in its membership officials of Government Bureaus charged with the duties of supervision of life

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insurance companies and meeting in a country where the discussion of State Supervision in its various phases is constant, the subject of the Province of State Supervision of Life Insurance Companies and the technical principles pertaining thereto naturally found a place. The papers on the subject were chiefly expository of the laws, regulations and principles, in accordance with which supervision is carried on in different countries. The discussion on the subject covered a wide field, with varying and diversified expressions of thought and opinion. It was argued with great force that, "to obtain the absolute security for the future which the human institution of Life Insurance demands, an alliance must be had with that peculiar institution existing among mankind, which has the two qualities of perpetuity and directness of action;" i. e. Government, the State; "the life insurance institution ought to welcome the co-activity of the institution of Government in the field of Life Insurance to the widest extent to which it may be offered." While it appeared in the discussion that there was a very general agreement that State supervision in some form is a necessity, the weight of opinion expressed was to the effect that it should be limited in its range of action. That satisfactory assurance of the solvency of companies is a proper and desirable function was generally agreed; also that the eliciting of sufficient imformation for publication and the verification of such information, if necessary, as well as the authority to protect the public from fraudulent and dangerous practices, are duties which must properly devolve npon a governmental bureau. But it would be going too far to say that the Congress consented to any theory that affairs of the internal administration of companies, as for instance the adjustment of scales of surrender values or the methods of the division of surplus, may properly be classed as subject to the dictation of supervising authorities, so long as the proper equities between policy-holders are observed and carried out.

The international character of the Congress has been mentioned; in one particular this fact may be further emphasized. A gratifying feature to us, as American citizens, was the cordial acceptance by the foreign members of the Congress of the invitation to be present at the meeting on this side of the water. We were honored by the attendance of our foreign visitors and by the interest displayed by them in our methods, our institutions

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and our course of thought and feeling. It is not too much to hope that the occasion of this Congress may have an influence in forming where yet they do not bind, in strengthening where they already exist, those friendly relations between different peoples of which, even to-day, the world stands sorely in need.

Members of the National Association of Life Underwriters; it is my privilege to be present with you on this occasion as a representative of the Actuarial Society of America. With a difference in age of but one year, both associations have now compassed about half a generation of fruitful and stimulating effort in promoting their several interests. Engaged in but different phases of the same work, the members of these two societies exert their activities in a common field and to a common end, and it is with the sincere and earnest hope, that a livelier sense of this fact may facilitate and render more profitable the relations which we sustain to each other in our daily walk and avocation, that I meet with you here to-day.

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The British Offices Life Tables, 1893: A Note on their Naming.

C. D. HIGHAM.

The Joint Committee of The Institute of Actuaries and The Faculty of Actuaries in Scotland entrusted with the charge of the recent mortality investigation in Great Britain decided some months ago how certain of the tables are to be distinguished, but in view of the importance that all of them should have an authorized symbol for use as and when required, the Committee has lately dealt generally with the subject, and it may be convenient to have on record for future reference the conclusions at which it arrived.

It will be remembered that the tables at large are to be known as "The British Offices Life Tables, 1893," and O (from Offices), being easily written and not clashing with other symbols in daily use, has been adopted as defining the mortality investigation, or what may be called the genus. The particular experiences in it, or species, are indicated by index letters, which would seem, if a list as appended be given, to explain themselves.

Males—Whole Life Assurance, participating	- -	O^{M} *
do non-participating	-	O^{NM}
" Endowment Assurance	- - - -	O^{EM}
" Limited Payments	- - - - -	O^{LM}
" Ascending Premiums	- - - - -	O^{IM}†
" Temporary Assurance	- - - - -	O^{TM}
" Joint Life Assurance	- - - - -	O^{JM}

*It will be observed that "The O^{M} Table" is a precise description without any reference to The British Offices Life Tables, 1893, though in writings for the public it will generally be desirable to add the redundant expression.

†I (Increasing) to avoid A.

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Males—Contingent Assurance - - - - - - $\bigcirc^{C\,M}$

" Annuities - - - - - - - - $\bigcirc^{a\,m}$‡

Select Tables are indicated by square brackets thus $\bigcirc^{[M]}$

And Truncated Aggregate Tables by a figure within parenthesis denoting the number of years excluded, thus - - - - - - - $\bigcirc^{M(5)}$

For Female Lives—F instead of M, and *f* instead of *m* throughout.

As an example, the Mortality assumed for the Contingent Assurance Premiums just published is:

For the Assured Life, the $\bigcirc^{[M]}$ Table.

For the Counter Life, the $\bigcirc^{[a\,f]}$ Table.

The Committee's hope is that these designations will be found convenient, and commend themselves to the profession. If they do, the system may perhaps be adopted for other investigations, the $\bigcirc$ being changed into the proper expression of the character of the mortality, the classes being distinguished by the same index letters which (other than M or *m* and F or *f* which would be shown by colour or a blank) would also be the marks for the cards on which the particulars are collected.

‡The Annuity Tables may also be called "The British Offices Life Annuity Tables, 1893."

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1903 ASSETS, $89,180,908.99 1903

STATEMENT OF THE

METROPOLITAN LIFE INSURANCE CO.

(INCORPORATED BY THE STATE OF NEW YORK)

FOR THE YEAR ENDING DECEMBER 31, 1902

ASSETS		LIABILITIES	
United States, City and R.R. Bonds and Stocks	$48,175,071 19	Reinsurance Fund and Special Reserves	$78,020,658 00
Bonds and Mortgages	25,669,560 40	All other Liabilities	797,126 53
Real Estate	11,251,482 49	Capital and Surplus	10,363,124 46
Cash	4,518,533 40		
Loans to Policy-holders	1,285,835 05		
Premiums, deferred, and in course of collection (Net)	2,790,897 10		
Accrued Interest, Rents, etc.	490,029 86		
	$89,180,908 99		$89,180,908 99

COMPARISONS, ETC.

Income in 1902	$43,836,283 61	Net Gain in No. of outstanding Policies for the Year	742,349
Gain over 1901	5,319,120 02	Number of Policy Claims paid in 1902 (Averaging one for every minute and a half for each business day of 8 hours each.)	97,595
Increase in Assets during 1902	14,409,150 23	Amount paid on the Above (Averaging $78 a minute of each business day of 8 hours each.)	$11,397,333 42
Surplus in 1902	10,363,124 46	Policy-Claims. Dividends and Surrender-Values paid Policy-holders in 1902	$12,362,164 03
New Insurances Accepted and Issued in 1902 as follows:		No. of Policy-Claims paid last 5 years	423,727
INDUSTRIAL DEPT. $312,990,338,00		Paid Policy-holders since organization, plus amount now invested for their security	$207,641,835 60
ORDINARY DEPT. 101,812,141.00			
	$414,802,479 00		
No. of Policies in Force December 31, 1902	6,976,651		
Total Outstanding Insurance December 31, 1902	$1,219,166,427 00		

THE DAILY AVERAGE of the Company's business during 1901 was

831 per day in Number of Claims Paid.
6,938 per day in Number of Policies Issued.
$1,364,481.84 per day in New Insurance written.
$87,452.27 per day in Payments to Policy-holders and addition to Reserve.
$47,422.40 per day in Increase of Assets.

GROWTH IN TEN-YEAR PERIODS

YEAR	INCOME FOR THE YEAR		ASSETS AT END OF YEAR		SURPLUS AT END OF YEAR		NUMBER OF POLICIES IN FORCE AT END OF YEAR		YEAR
Dec. 31, 1882	$1,354,267 69	1882	$2,002,464 13	1882	$379,907 13	1882	341,632	1882
Dec. 31, 1892	13,307,811 45	1892	16,506,282 22	1892	3,674,516 49	1892	2,719,860	1892
Dec. 31, 1902	43,836,283 61	1902	89,180,908 99	1902	10,363,114 46	1902	6,976,651	1902

OFFICERS

JOHN R. HEGEMAN, President
HALEY FISKE, Vice-President
GEORGE H. GASTON, Second Vice President
GEORGE B. WOODWARD, Third Vice-President
JAMES M. CRAIG, Actuary
JAMES S. ROBERTS, Secretary
JOHN R. HEGEMAN, JR. Assistant Secretary
J. J. THOMPSON, Cashier and Assistant Secretary
T. R. RICHARDSON, Assistant Secretary
STEWART L. WOODFORD, Counsel
THOMAS H. WILLARD, M. D., Medical Director
AUGUSTUS S. KNIGHT, M. D., Medical Director
W. S. MANNERS, M. D., Assistant Medical Director
E. M. HOLDEN, M. D., Assistant Medical Director

I. J. CAHEN, Manager Ordinary Department
FRANK Q. AYERS, Asst. Manager, Ordinary Dept.

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SUBSTANTIAL AND RELIABLE.

The Travelers Insurance Co. of Hartford, Conn.

Sylvester C. Dunham, President.

39th ANNUAL STATEMENT OF FINANCIAL CONDITION

HARTFORD, JANUARY 1, 1903

RESOURCES.		RESERVES, ETC.	
Railroad Bonds and Stocks	$16,728,055 55	Reserve Funds, to protect Policies	$31,285,842 43
Loans secured by Mortgages, first liens	7,415,963 86	Losses in process of adjustment	201,841 54
Government, County and Municipal Bonds	4,336,549 30	Life Premiums paid in advance	34,730 11
Other Bonds and Stocks	1,906,400 00	Special Reserve for taxes, rents, etc.	121,625 53
Loans secured by Company's Policies	1,969,475 00	Reserve to protect security Valuations	100,000 00
Cash on hand and in Bank	1,435,319 58	Excess Security to Policy-holders	5,334,328 37
Real Estate	1,193,531 62		
Bank Stocks	1,153,837 00		
Loans secured by Collateral	630,043 83		
Interest accrued but not due	298,429 21		
Deferred Life Premiums	419,199 01		
Premiums in course of collection on Life Policies	271,564 02		
Total Resources,	$37,078,367 98	Total Reserves, etc.	$37,078,367 98

RECORD OF 1902.		RECORD TO END OF 1902.	
Total Cash Income	$10,210,000	Paid to Policy-holders	$50,000,000
Increase in Resources	3,260,000	Life Insurance in Force	125,000,000
Increase in Cash Income	1,300,000		
Increase in excess security to Policy-holders	320,000	Number of Accident Policies issued	3,320,000
New Life Insurance issued during year	19,370,000	Number of Accident Claims paid	394,000
Paid to Policy-holders	3,700,000		
Added to Reserve Funds	2,940,000		

JOHN B. LUNGER, Vice-President — JOHN E. MORRIS, Secretary
E. V. PRESTON, General Manager of Agencies
H. J. MESSENGER, Actuary — J. B. LEWIS, M.D., Medical Director

HOME LIFE INSURANCE COMPANY

GEORGE E. IDE, PRESIDENT

256 BROADWAY, NEW YORK

Total Amount of Premiums received since organization, May 1, 1860	$39,779,031 39
Total Amount paid to Policy-holders since organization	$25,613,275 29
Admitted Assets held as security for Policy-holders, January 1, 1903	$14,432,216 56
Total Amount paid Policy-holders, and the amount now held as security for the payment of their contracts	$40,045,491 85
Total Dividends paid Policy-holders since organization	$5,597,954 88
Surplus on basis of Admitted Assets, Valuation, Legal Standard State of N. Y.	$1,323,407 80
Present Value of Dividend-Endowment Accumulations	$983,060 00

INSURANCE IN FORCE JANUARY 1, 1903
35,637 POLICIES - - - - - - - $65,258,568 00

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NATIONAL LIFE INSURANCE CO.

MONTPELIER, VT.

Insurance in Force Jan. 1, 1903, $118,301,698

ISSUES the following Policies: **Life Option, Non-Participating Life, Life Rate Endowment, Endowment Bond, Instalment Bond, Ten-Year Term.** Insurance Rights may be attached on application, to any of these forms. It provides, without complication, for the payment of the insurance proceeds in any number of from one to twenty instalments. After three years every policy has a value, every value is endorsed, every endorsement is guaranteed. The composite character of this Company's contracts renders them especially valuable to professional men and salaried officers.

Assets, January 1, 1903, - -	$25,335,030 36
Liabilities, January 1, 1903, -	22,750,266 66
Surplus, January 1, 1903, - -	$2,584,763 70

JOS. A. DE BOER, - - President
JAMES T. PHELPS, - Vice-President
JAMES B. ESTEE, - 2d Vice-President
O. D. CLARK, - - - Secretary
H. M. CUTLER, - - Treasurer
A. B. BISBEE, - Medical Director
C. E. MOULTON, - - Actuary
F. A. HOWLAND, - - Counsel

CONFEDERATION LIFE ASSOCIATION

Head Office — *Toronto Canada*

Policies issued on all approved plans of insurance

W. H. BEATTY, *President*
W. D. MATTHEWS FREDERICK WYLD
Vice-Presidents

DIRECTORS

HON. SIR W. P. HOWLAND
HON. JAMES YOUNG
S. NORDHEIMER
A. MCLEAN HOWARD
GEORGE MITCHELL, M. P. P.
E. B. OSLER, M. P.
CHARLES H. GOODERHAM
JOHN J. LONG

W. C. MACDONALD, *Actuary* J. K. MACDONALD, *Managing Director*

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The Mutual Benefit Life Insurance Company

NEWARK, N. J.
Organized 1845

CHARTER PERPETUAL

FREDERICK FRELINGHUYSEN, PRESIDENT

Premium Receipts to January 1, 1903		$238,211,899 23
Of this sum there has already been returned to Policy-holders:		
For Policy Claims	46.3 per cent.	$110,233,051 54
For Surrendered Policies	12.6 per cent.	30,210,071 48
For Dividends	24.8 per cent.	59,072,787 46
Total	83.7 per cent.	$199,515,910 48
Leaving still in Company's possession		$38,695,988 75
The Company's investments have yielded sufficient returns to pay all Expenses and Taxes, and still to add to the Policy-holders' Fund for the fulfillment of existing contracts		44,137,737 41
Total Assets, January 1, 1903, Market Values		$82,833,726 16

INCREASE IN 1902 OVER 1901

In Premium Receipts	$925,957 50
In Total Receipts	969,408 75
In Amount Paid Policy-holders	331,047 75
In Assets, Par Values	4,658,948 47
In Assets, Market Values	4,423,176 50
In Surplus, Par Values	413,194 11
In Surplus, Market Values	177,422 14
In Insurance Issued and Revived	4,338,997 00
In Outstanding Insurance	19,887,568 00

B. J. MILLER, Vice-President and Mathematician

LE. GAGE PRATT, Second Vice-President
EDWARD L. DOBBINS, Sec'y and Treas.
J. WM. JOHNSON, Assistant Secretary
SAMUEL W. BALDWIN, Asst. Treasurer
GEORGE ROBOTHAM, Auditor

SYDNEY N. OGDEN, } Assistant
EDWARD E. RHODES, } Mathematicians
AMZI DODD, General Counsel
WILLIAM S. DODD, Associate Counsel
DAVID KAY, JR., Attorney

MEDICAL BOARD

EDGAR HOLDEN, M. D. GEO. A. VAN WAGENEN, M. D.
JOSEPH C. YOUNG, M. D.

DIRECTORS

AMZI DODD
EDWARD H. WRIGHT
MARCUS L. WARD
FREDERICK M. SHEPARD
EUGENE VANDERPOOL
FRED'K FRELINGHUYSEN
ALBERT B. CARLTON
BLOOMFIELD J. MILLER
ROBERT F. BALLANTINE
FRANKLIN MURPHY
CHARLES S. BAYLIS
EDWARD L. DOBBINS

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THE PACIFIC MUTUAL

Life Insurance Company of California

(LIFE, ACCIDENT AND HEALTH)

. . . ORGANIZED 1868 . . .

HOME OFFICE

PACIFIC MUTUAL BUILDING . . SAN FRANCISCO

UNION MUTUAL LIFE INSURANCE COMPANY

PORTLAND, ME.

Incorporated 1848.

Values and Privileges

under policies constantly kept in line with the times.

FRED E. RICHARDS, - President	ARTHUR L. BATES, Vice-President
J. FRANK LANG, - - Secretary	JOSIAH H. DRUMMOND. Solicitor
SAMUEL S. BOYDEN, - Actuary	E. M. NORTHCOTT, M.D., Med. Dir.

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THE ÆTNA Life Insurance Company

HARTFORD, CONN.

The Largest Company in the World

WRITING

Life, Term, Endowment, Accident, Health and Liability Insurance.

Assets	$63,493,545 73
Guarantee Fund, Company's Standard ...	5,500,501 05
Guarantee Fund, Connecticut Standard ...	7,694,434 05
Paid Policy-holders over	133,000,000 00

MORGAN G. BULKELEY, President

H. W. ST. JOHN, Actuary
MAX H. PEILER, Asst. Actuary
J. L. ENGLISH, Secretary
C. E. GILBERT, Asst. Secretary
W. C. FAXON, Secretary Accident Dept.
J. S. ROWE, Asst. Secretary Accident Dept.
GURDON W. RUSSELL, M.D., Med. Director
E. K. ROOT, M.D., Med. Director
P. H. INGALLS, M.D., Med. Examiner
W. E. DICKERMAN, M.D., Med. Examiner

NORTH AMERICAN LIFE ASSURANCE COMPANY

HOME OFFICE
TORONTO
CANADA

A STRONG
RELIABLE
PROGRESSIVE
COMPANY

President
J. L. BLAIKIE, Esq.

Secretary
W. B. TAYLOR, B.A., LL.B.

POLICIES ISSUED
ON ALL
APPROVED
UP-TO-DATE
PLANS OF
INSURANCE

Vice-Presidents
JAMES THORBURN, M. D.
SIR W. R. MEREDITH

L. GOLDMAN, A. I. A., F. C. A., Managing Director

NEW YORK OFFICE, Boreel Building, 115 BROADWAY

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The Connecticut Mutual Life Insurance Company

PRESENTS a record of fifty-seven years of business, conservatively, economically and successfully managed. Its strength and stability are unquestioned; its reputation unsullied; the care and economy with which its business is managed and the resulting benefits to its members unsurpassed.

OF the $222,022,804.83 which the Connecticut Mutual has received from its policy-holders, it has returned to them or paid to their beneficiaries $220,472,548.69, or 99.30 per cent. What it has so paid back and what it still holds as security for policy contracts, aggregates $286,117,185.40, or 128.87 per cent. of its receipts from policy-holders. This has been done at an expense ratio of only 9.21 per cent. of the total receipts.

That it is a record of a Mutual Life Insurance Company doing actual Mutual Life Insurance, and it challenges comparison.

JACOB L. GREENE, President. JOHN M. TAYLOR, Vice-Pres.

DANIEL H. WELLS, Actuary. HERBERT H. WHITE, Sec'y.

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The Massachusetts Mutual Life Insurance Company

Chartered in 1851

PAID-UP AND CASH SURRENDER VALUES WRITTEN IN POLICIES

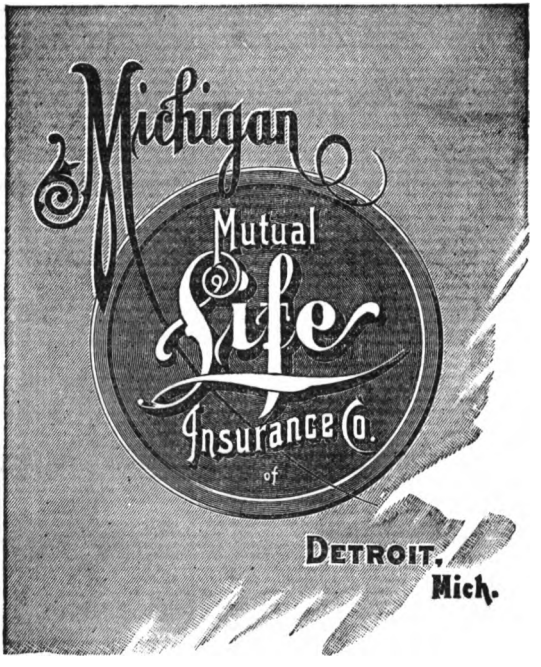
Assets, January 1, 1903 -	$30,960,145.22
Liabilities - - -	28,354,119.97
Surplus - - -	2,606,025.25

Insurance in Force, January 1, 1903 - $158,703,802.00

Home Office: Springfield, Mass.

JOHN A. HALL, President JULIUS H. APPLETON, Vice-President
HENRY M. PHILLIPS, Secretary OSCAR B. IRELAND, Actuary
CHARLES H. ANGELL, Assistant Actuary

O. R. LOOKER, President



A. F. MOORE, Secretary

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The Prudential Agent

Has to Offer a Most Varied Line of Life and Investment Policies, on both Participating and Non-Participating Plans

He Has a Most Advantageous Agency Contract

with Liberal First Year and Renewal Commissions

The Company has Open Territory in which it desires .....Good Representatives..... For Particulars Write

The Prudential Insurance Company
OF AMERICA

JOHN F. DRYDEN
President

Home Office
NEWARK, N. J.

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Canada Life

Established 1847

ALL business of this Company up to 31st December, 1899, is valued by the Institute of Actuaries' H_m Three and One-half Per Cent. Table, and all business since then by the H_m Three Per Cent. Table. With one possible exception, no other life company on this continent employs so stringent a valuation basis or holds such strong Policy Reserves as the

CANADA LIFE

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THE... BEST COMPANY FOR POLICY-HOLDERS AND AGENTS.

EDWARD W. SCOTT, President.

Provident Savings Life Assurance Society OF.... NEW YORK.

Successful Agents and Gentlemen seeking Remunerative Business Connections may apply to the Head Office or any of the Society's General Agents.

The Union Central Life Insurance Company

of Cincinnati

ASSETS.....$34,110,546.20
SURPLUS..... 5,216,749.76

THIS COMPANY EXCELS IN LOW DEATH RATE. RAPID INCREASE OF BUSINESS. HIGHEST INTEREST EARNINGS. SAFEST POSSIBLE INVESTMENTS. LARGEST DIVIDENDS ON DIVIDEND-PAYING POLICIES

John H. Pattison, President *E. P. Marshall, Secretary*

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ORGANIZED 1865

MARYLAND LIFE INSURANCE COMPANY OF BALTIMORE

HOME OFFICE: 8 AND 10 SOUTH STREET

BALTIMORE

All approved forms of Life and Endowment policies and Annuities issued at moderate rates. Modern policies containing liberal guaranteed values.

Competent field men can obtain valuable contracts for unoccupied territory direct from the Home Office.

WM. H. BLACKFORD, PRESIDENT JOHN W. HANSON, SECRETARY

The JOHN HANCOCK MUTUAL LIFE INSURANCE COMPANY OF BOSTON, MASS.

STEPHEN H. RHODES, President
ROLAND O. LAMB, Vice-President

WALTON L. CROCKER, Secretary
WILLIAM S. SMITH, Actuary

A Strictly Mutual Company, issuing the most desirable forms of policies, subject to the requirements of the conservative Statutes of Massachusetts. The essential features of its policy contracts are

SIMPLICITY, LIBERALITY, EQUITY.

That these qualities have won for the Company a large measure of public confidence is shown by the amount of

New Insurance Written in 1902, . . . $89,469,625.00

Increasing the Outstanding Insurance, Dec. 31, 1902, to $288,358,118.00

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The Penn Mutual Life Insurance Company ...OF... PHILADELPHIA, PA.

GROSS ASSETS, January 1, 1903,	$54,682,956 62
Surplus Accumulated upon Special Forms of Policies - - - - -	3,273,841 09
Surplus for all other Contingencies	3,318,993 35
TOTAL SURPLUS - - - - -	6,592,834 44

HARRY F. WEST, - President
GEORGE E. JOHNSON, Vice-President
HENRY C. BROWN, Secretary and Treasurer
JESSE J. BARKER, - Actuary
JOHN W. HAMER, Manager of Loan Department
HENRY C. LIPPINCOTT, Manager of Agencies
HENRY H. HALLOWELL, Asst. Secretary and Treasurer

The PENN is purely MUTUAL. Insurance is furnished at exact cost. Its factors—mortality, interest and expense—have all been highly favorable in this Company. All policies are absolutely NON-FORFEITABLE for reserve value, the latter being applied to "EXTENSION" or to "PAID-UP," as may be desired. Its policies are free from technicalities snd are INCONTESTABLE one year from date. Cash values any year after the second

---

1850 — 1903

THE UNITED STATES
Life Insurance Company
IN THE CITY OF NEW YORK
JOHN P. MUNN, M.D., President

ACTIVE and successful Agents who desire to make Direct Contracts with this well-established and progressive Company, thereby securing for themselves not only an immediate return for their work, but also an increasing annual income commensurate with their success, are invited to communicate with Richard E. Cochran, Third Vice-President, at the Company's Office, 277 Broadway, New York City

Assets - - - over $8,600,000
Insurance in Force, over $45,000,000

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NEW-YORK LIFE INSURANCE COMPANY

JOHN A. McCALL, PRESIDENT

New Paid-for Business, 1902	$302,798,229
Paid-for Insurance in force Dec. 31, 1902	1,553,628,026
Income, 1902	79,108,401
Excess Income over Expenditures, 1902	32,182,810

ASSETS, December 31, 1902 ... $322,840,900

Reserve Value of Policies as calculated by New York Insurance Department	$268,344,420 00
General Liabilities	4,462,361 00
Additional Reserve on Policies which the Company values on a higher basis than that used by Insurance Department	5,397,325 00
Reserve to provide dividends payable to policy-holders in 1903 and in subsequent years	34,125,079 00
Reserve to provide for all other contingencies	10,511,715 00
Total	$322,840,900 00

Policies automatically non-forfeitable and incontestable from date of issue.

Detailed statement (mailed on request) contains complete schedule of securities owned, and of property mortgaged to Company.

The New-York Life does business under the supervision of every insurance department in the world.

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INCORPORATED 1844

STATE MUTUAL LIFE ASSURANCE COMPANY

OF WORCESTER, MASS.

Assets, January 1, 1903, - - -	$21,678,560 35
Liabilities, January 1, 1903, - -	19,281,299 00
Surplus, January 1, 1903, Massachusetts Standard,	$2,397,261 35

A. G. BULLOCK, President — H. M. WITTER, Secretary

The Provident Life and Trust Company of Philadelphia

INSURANCE IN FORCE, - -	$152,000,000
ASSETS, - - - - - - - - -	49,250,000
SURPLUS, - - - - - - - -	7,325,000

The NEW INCOME AND PRINCIPAL

Policy of the Provident is Attractive

First, because of the **low rate of premium** charged, and because this low rate of premium is **still further reduced by annual dividends.**

"Ratio of actual to expected rate of mortality on amounts insured from organization of Company, a period of thirty-eight years, only .618"

OFFICERS

SAMUEL R. SHIPLEY, President

T. WISTAR BROWN, Vice-President — ASA S. WING, Vice-President

JOSEPH ASHBROOK, Mgr. Insurance Department — DAVID G. ALSOP, Actuary

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The Manhattan Life

OF NEW YORK

Has an established record for progressiveness, liberality and clearness of its policy contracts. It was the first company to introduce (March 8, 1864) the

Incontestable Feature

The Policy Contract Guarantees

LOANS AT FIVE PER CENT. INTEREST
EXTENDED INSURANCE
PAID-UP VALUES

Provision is also made for both

Insurance Protection and Investment

THE MUTUAL LIFE OF CANADA

WATERLOO, ONT.

HAD JANUARY 1ST, 1903

Policies in force amounting to	$34,467,420 00
Assets, all belonging to policy-holders ...	6,459,780 00
Reserves, for the security of policy-holders	5,925,444 00

SINCE ORGANIZATION IN 1869

Total interest income	$2,503,433 10
Total death claims paid	2,424,521 63
Interest received exceeding claims paid by	$78,911 47

THE RESULTANT OF

PRODUCTIVE INVESTMENTS, LOW EXPENSE RATE AND FAVORABLE MORTALITY

ROBERT MELVIN, PRESIDENT W. H. RIDDELL, SECRETARY

GEORGE WEGENAST, MANAGER

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"STRONGEST IN THE WORLD"

THE EQUITABLE LIFE ASSURANCE SOCIETY

OF THE UNITED STATES

HENRY B. HYDE, Founder

Outstanding Assurance Dec. 31, 1902 . .	$1,292,446,595.00
New Assurance Issued in 1902	281,249,944.00
Income	69,007,012.25
Assets Dec. 31, 1902 .	359,395,537.72
Assurance Fund and all other liabilities . .	284,268,040.95
Surplus	75,127,496.77
Paid Policy-holders in 1902	29,191,250.79

JAMES W. ALEXANDER, PRESIDENT
JAMES H. HYDE, VICE-PRESIDENT

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THE

WASHINGTON

LIFE INSURANCE COMPANY OF NEW YORK

1860-1903

W. A. BREWER, JR., PRESIDENT

BOARD OF DIRECTORS

Levi P. Morton
W. A. Brewer, Jr.
Robert Bowne
Charles H. Ludington
Francis Speir
Henry F. Hitch
Charles P. Britton
Francis G. Adams
Frederic R. Coudert
David Thomson
Roland G. Mitchell
Randolph F. Purdy
George M. Hard
John Hopson
Elisha S. French
John W. Brannan, M. D.
E. V. Connett
John Burling Lawrence
Graham H. Brewer
Oswald Sanderson
Jordan L. Mott, Jr.
Israel C. Pierson
Henry H. Cook
Lloyd B. Sanderson
Morris B. Mead

E. S. FRENCH, Vice-President
CYRUS MUNN, Second Vice-President
ISRAEL C. PIERSON, Actuary
GRAHAM H. BREWER, Secretary
B. F. ELLSWORTH, Assistant Secretary
J. W. BRANNAN, M.D., Medical Director

The Life Insurance Company of Virginia

Organized 1871

Home Office: Richmond, Va.

J. G. WALKER, President
T. WILLIAM PEMBERTON, First Vice-President
J. W. PEGRAM, Second Vice-President
W. L. T. ROGERSON, Secretary

The Most Approved Forms of Life, Endowment and Industrial Policies .....Issued on Favorable Terms.....

TOTAL PAYMENT TO POLICY-HOLDERS SINCE ORGANIZATION

OVER FIVE MILLION DOLLARS

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New England Mutual Life

Insurance Company

POST OFFICE SQUARE - BOSTON, MASS.

ASSETS, January 1, 1903,	$34,432,217	08
LIABILITIES, . .	30,927,610	76
	$3,504,606	32

CASH distributions paid upon all policies . . . .
Every policy has endorsed thereon the cash surrender and paid-up insurance values to which the insured is entitled by the Massachusetts Statute . . .
Pamphlets, rates and values for any age sent on application to the office of the Company . . .

BENJAMIN F. STEVENS, President

ALFRED D. FOSTER, Vice-President

S. F. TRULL, Secretary

WILLIAM B. TURNER, Assistant Secretary

HERBERT B. DOW, Actuary

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The GERMANIA LIFE INSURANCE COMPANY

Founded by HUGO WESENDONCK IN 1860

HOME OFFICE

20 Nassau Street, New York City

European Branch Office

Behrenstrasse 8, Berlin, Germany

(ESTABLISHED IN 1868)

AGENCIES in all the larger Cities of the United States of America and of the German Empire; also in Austria-Hungary, Belgium, Denmark, France, Holland and Switzerland

CORNELIUS DOREMUS, President
HUBERT CILLIS, Vice-President
MAX A. WESENDONCK, Second Vice-President
JOHN FÜHRER, Actuary
CARL HEYE, Secretary

ORGANIZED 1851.

BERKSHIRE LIFE INSURANCE CO.

OF

PITTSFIELD, MASS.

ISSUES	ALL IMPROVED FORMS OF LIFE AND ENDOWMENT INSURANCE POLICIES.

WILLIAM R. PLUNKETT, President.

JAMES M. BARKER, Vice-President. JAMES W. HULL, Secretary and Treasurer.

JAMES M. LEE, Actuary.

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The Northwestern Mutual Life Insurance Company

OF MILWAUKEE, WIS.

FROM ANNUAL STATEMENT OF 1903

Assets, January 1, 1903	$165,042,435 33
Liabilities, including $25,424,594 approximate Surplus Accumulations, held to meet Tontine and Semi-Tontine Policy Contracts	159,564,804 52
General Surplus	$5,477,630 81

Income, 1902	$31,638,582 65
Disbursements, 1902	17,810,975 94

Loaned on Bond and Mortgage in 1902	$14,313,191 62
Loans outstanding on Bond and Mortgage	76,543,348 60

Policies in force January 1, 1903 (Paid for Basis) ..	262,094
Insurance in force January 1, 1903 (Paid for Basis)	$620,681,283 00

Percentage of Death Losses to mean amount of insurance in force for 1902, 0.87.

The Company issues policies on all approved forms.

Limit of insurance on one life $100,000.

H. L. PALMER
President

J. W. SKINNER
Secretary

WILLARD MERRILL
Vice-Pres.

WM. P. McLAREN
2d Vice-Pres.

GEO. C. MARKHAM
3d Vice-Pres.

C. A. LOVELAND
Actuary

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Sun Life Assurance Company

OF CANADA

TEN YEARS' PROGRESS

	Income	Net Assets exclusive of Uncalled Capital	Life Assurances in Force
1892	$1,134,867 61	$3,403,700 88	$23,901,046 64
1902	3,561,509 34	13,480,272 88	67,181,601 63
Increase	$2,426,641 73	$10,076,572 00	$43,280,554 99

HEAD OFFICE, MONTREAL

R. MACAULAY, President

S. H. EWING, Vice-President

T. B. MACAULAY, F.I.A., Secretary and Actuary

ARTHUR B. WOOD, A.I.A., Assistant Actuary

FREDERICK G. COPE, Superintendent of Agencies

CONNECTICUT

GENERAL LIFE..... INSURANCE COMPANY

of Hartford, Conn.

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SIXTY YEARS THE LEADER

The Mutual Life Insurance Company of New York, founded 1843, is the oldest active life insurance company in the United States and the largest in the world.

THE LARGEST

amount of assets held by any life insurance company in the world is held by The Mutual Life Insurance Company of New York, and exceeds

Three Hundred and Ninety Million Dollars

The Mutual Life Insurance Company of New York has also made

THE LARGEST

sum total of disbursements to policy-holders in the history of life insurance, it having paid out over

Six Hundred Million Dollars

Unbroken fidelity to the interests of policy-holders whose funds are held in trust has won for the Company world-wide distinction for enlightened and conservative administration. The Board of Trustees has at all periods represented the best in the business and social life of the community.

THE MUTUAL LIFE INSURANCE COMPANY OF NEW YORK

RICHARD A. MCCURDY, PRESIDENT

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Vol. VII. No. 30

ACTUARIAL SOCIETY OF AMERICA

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